Original Article

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The Prevalence of Anxiety, Stress, and Depression with Respect to Coping Strategies in Caregivers of Patients with Head Injuries

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Abstract

Context: Psychological problems are very common in traumatic patients' caregivers necessitating usage of appropriate coping strategies to promote their mental health. **Aim:** The aim of this study was to assess anxiety, stress, and depression as well as coping strategies in caregivers of patients with head injuries. **Settings and Design:** In this cross-sectional study, 127 caregivers of traumatic patients referred to educational hospitals of Zabol city were selected by convenience sampling method. **Subjects and Methods:** The data were collected using a demographic questionnaire, as well as Depression, Anxiety and Stress Scale-21 and the Jalowiec coping strategies tools. The data were analyzed using descriptive statistics, one-way ANOVA, independent samples Student's *t*-test, and multivariate regression model. **Results:** Our findings showed that more than 70% of the caregivers of patients with head injuries suffered from severe and very severe stress and anxiety. The multivariate regression model demonstrated a negative and significant relationship between either stress ($B = -0.81$ $P = 0.001$) or depression ($B = -1.23$ $P = 0.000$) and problem-based coping strategies. Furthermore, stress ($B = 0.64$ $P = 0.006$) and anxiety ($B = 0.74$ $P = 0.002$) were negatively associated with emotional-based coping strategies. **Conclusion:** Considering the high rates of anxiety, stress, and depression in caregivers of patients with head injuries and significant associations observed between these variables and problem-based strategies, it is necessary to identify and obviate factors leading to anxiety and to educate coping strategies to these individuals.

Keywords: Anxiety, coping strategies, depression, family caregivers, head injuries, stress

Introduction

Brain injury is the most devastating accident-born health consequence. Despite widespread medical advances, brain injuries still remain major causes of mortality and morbidity among populations and especially youths.[1]

According to the results of a study among students of medical universities in Tehran, accident is the third leading cause of death and the main reason of hospitalization in Iran.[2] Trauma-born temporary or permanent disabilities affect not only patients but also their families.[3] Studies have shown that traumatic patients' family members experience high levels of pressure attending and admitting patients to hospitals. This pressure often leads to behavioral bewilderment and

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psychological frustration presenting as anxiety and stress which adversely affect daily routine in these individuals.[4] Caregivers' psychological distresses may further propagate to patients and healthcare personnel disturbing their communications as well.[5] In fact, caregivers' mental health directly affects the quality of healthcare services.[6]

Coping strategies are necessary to counteract with stressful situations[7] and include a set of cognitive and behavioral attempts[8] aiming to manage internal and external tensions and mitigate their impacts.[9,10] Coping approaches against stressful situations are generally divided into problem-based and emotional-based strategies. The problem-based coping strategies represent actions aiming to alter or mitigate the stressful situation through finding solutions for the psychological problem. On the other hand, emotional-based coping strategies comprise a combination of emotional responses to a problem. Emotional strategies are commonly used when individuals perceive an irreversible problem and generally aim to reduce the stress, but not to logically solve the problem.[11] Researchers believe that in facing stressful situations, the concept of coping is more important than the stress itself. In fact, coping strategies and not stress affect individuals' daily functions.[12]

It is recommended for family caregivers to recruit active adaptive strategies to improve their physical and mental health.[13,14] Given the acute nature of cerebral trauma, patients and their caregivers are prone to psychological problems including stress and anxiety which can affect the quality of care provided by caregivers. Therefore, it is important for caregivers to use appropriate coping strategies to overcome these problems. The aim of this study was to determine relationships between coping strategies and stress, depression, and anxiety in caregivers of patients with head injuries referred to educational hospitals of Zabol city during 2016–2018.

Subjects and Methods

This was a cross-sectional study carried out in educational hospitals of Zabol city from June 2016 to April 2018. The study population included 127 family caregivers of inpatients and outpatients with head injuries chosen by convenience sampling method. The inclusion criteria comprised being a first-degree relative to the patient, sharing a main role in supporting the patient, reading and writing abilities, willing to participate in the study, and having no history of psychiatric disorders. Exclusion criteria comprised being illiterate, not willing to participate, and using antianxiety drugs.

Three data collection tools included (1) a demographic questionnaire, (2) the Depression, Anxiety, and Stress Scale-21 (DASS-21) questionnaire, and (3) the Jalowiec coping style questionnaire. The demographic questionnaire included five questions about age, gender, occupation, and marital status.

As a shortened version of the DASS-42 questionnaire, DASS-21 was initially presented by Lovibond and Lovibond in 1995. Individuals can independently complete the DASS-21 questionnaire with no need for counseling with a psychologist.[14] In the DASS-21 questionnaire, each item is scored from 0 to 3. Depression, anxiety, and stress scores are then calculated by summing the scores of relevant items (i.e., items 2, 6, 8, 11, 12, 14, and 18 for stress, items 1, 4, 7, 9, 15, 19, and 20 for anxiety, and items 3, 5, 10, 13, 16, 17, and 21 for depression).

Antony *et al*. reported the Cronbach's alpha coefficients of 0.91, 0.94, and 0.87 for stress, depression, and anxiety, respectively.[15] The validity and reliability of DASS-21 questionnaire have been confirmed for being used in Iranians. In a study by Sahebi *et al*., on 970 students and military staff, the translated version of the scale was comparable to its original version retrieving the internal consistency values of 0.77, 0.79, and 0.78 for depression, anxiety, and stress, respectively.[16]

The coping strategy tool was adapted from the Jalowiec questionnaire. This tool consisted of 39 questions with 15 and 24 questions related to problem-based and emotional-based coping strategies, respectively. The scoring was based on Likert scale assigning either 5 (very high), 4 (high), 3 (moderate), 2 (few), or 1 (never) score to each item. Questions with negative meaning were scored in a reverse manner. The final score ranged from 15 to 75 for problem-based and from 24 to 120 for emotional-based coping styles. The score obtained for the problem-based coping style was categorized as either weak (score of 0–20), moderate (score of 21–40), or good (score of 41–60). The score obtained for the emotional-based style was also classified as either weak (score of 0–32), moderate (score of 33–64), or good (score of 65–96).[17] The content and construct validities were adequately assessed with test–retest correlation coefficients of 0.85 and 0.86 for problem-based and emotional-based coping strategies, respectively,[17] in Iran; the reliability of the standard Jalowiec coping strategy questionnaire has been determined as $r = 0.87$.[18]

Necessary explanations were provided to patients' and their caregivers by the researcher. The participants were also ensured about the anonymity and confidentiality of the provided data. The participants were free to withdraw from the study at any stage. The study protocol was approved by the Ethics Committee of Zabol University of Medical Sciences (ethical code: zbmu. 1.REC.1394.18).

Descriptive (mean and frequency) and analytical (independent Student's *t*-test, one-way ANOVA, and Pearson correlation coefficient) statistics were used to analyze the data. The confidence interval level was considered 95%.

Results

Most of the participants in this study were males (58.26%) and married (64.57%). Detailed information about the individuals' demographic characteristics has been presented in Table 1.

The means of emotional-based and problem-based coping strategies scores were 71.00 ± 5.41 and 50.60 ± 7.89, respectively.

According to the results of the DASS-21 questionnaire, 63.8% of the individuals had very severe stress. Moreover, 18.9% and

51.2% of the caregivers suffered from very severe depression and severe anxiety, respectively [Table 2].

Problem-based coping strategies were negatively associated with stress and depression [Table 3]. Regression analysis showed that one unit increase in stress and depression decreased the utility of problem-based coping strategies by 0.816 and 1.23, respectively.

Emotional-based coping strategies were positively associated with stress and anxiety [Table 4]. Regression analysis showed that one unit increase in stress and anxiety increased the utility of emotional-based coping strategies by 0.643 and 0.745, respectively.

Discussion

The aim of this study was to investigate the relationship between coping strategies and anxiety, stress, and depression in family caregivers of patients with head injuries. In this study, most of the caregivers recruited emotional-based coping strategies and represented severe depression and stress. Furthermore, more than half of them revealed moderate to severe anxiety. Furthermore, most family caregivers represented severe depression which was in line with the studies of Mazzotti *et al*. and Rumpold *et al*. in which more than half of cancer patients' caregivers suffered from psychiatric and mood disorders.[19,20] On the other hand, Manteghi *et al.* reported mild depression in psychic devotees' caregivers[21] which was against the results of the present study. This difference may be explained by different statistical populations and also delayed manifestation of depression.

Table 1: The distribution of demographic features in family caregivers of patients with head trauma

Variables	Frequency, *n* (%)
Age	
<25	58 (45.66)
25-35	53 (41.74)
>35	16 (12.60)
Gender	
Male	74 (58.26)
Female	53 (41.74)
Marital status	
Married	82 (64.57)
Single	45 (35.43)
Education	
Illiterate	22 (17.3)
Diploma	47 (37.0)
Higher than diploma	58 (45.7)
Occupation	
Self-employed	23 (18.11)
Employee	39 (30.70)
Student	37 (29.13)
Farmer	22 (17.32)
Others	6 (4.72)
Relationship with patients	
Father	45 (35.3)
Mother	22 (17.3)
Child	19 (15)
Spouse	34 (26.7)
Sister	2 (1.6)
Brother	5 (4)
Type of trauma	
Sport	15 (11.8)
Crash	62 (48.8)
Job injuries	22 (19.4)
Others	28 (22)
Tissue status	
Open	69 (54.3)
Close	58 (45.7)

Our findings showed that most of the caregivers suffered from severe and very severe anxiety. This finding was similar to the results of Manteghi *et al.* (2010) who examined anxiety in companions of patients admitted to hospital special care units.[21] In another study, Safaeian *et al*. (2017) investigated the relationship between caring pressure and stress, anxiety, and depression in the caregivers of cancer patients admitted to Imam Reza Hospital of Bojnourd and showed that >50% of the caregivers suffered from moderate anxiety.[22] This difference can be due to the different tools recruited for measuring anxiety in our study and that of Safaeian *et al*.

Most of our participants had severe and very severe stress. Likewise, Papastavrou *et al*. who assessed depression in cancer patients' companions[23] and Rahmani Anaraki *et al*. who examined depression in the companions of patients with psychological disorders described severe stress in the participants.[6]

According to the scores obtained here, most of the family caregivers had used emotional coping methods. In line with our observation, previous studies also revealed higher mean scores for emotional-based than problem-based strategies indicating higher utility of the former styles by caregivers.[24,25] As trauma is often a complicated and sudden event, family members have a short time to be adapted to the situation and therefore usually employ emotional-based coping strategies.

In this study, we found a positive and significant relationship between emotional-based coping styles and stress. This was while problem-based coping strategies were inversely and significantly correlated with stress. This indicated that caregivers with lower stress level were more likely to exploit problem-based coping approaches. In line, Papastavrou *et al*. showed that cancer patients' caregivers with severe stress applied emotional-based coping approaches while individuals with lower stress more frequently applied problem-based coping approaches.[23] Accordingly, using problem-based coping strategies can reduce stress in family caregivers.[26]

In this study, caregivers who utilized problem-based coping methods had lower level of depression. In parallel, researchers have found that patients with severe depression more frequently used emotional-based and maladaptive coping methods leading them toward frustration.[27] On the other hand, improvement in

Table 2: The distribution of stress, depression, and anxiety among family caregivers of patients with head trauma

Variables	Normal, *n* (%)	Mild, *n* (%)	Moderate, *n* (%)	Severe, *n* (%)	Very severe, *n* (%)
Stress	0	0	8 (6.3)	38 (29.9)	81 (63.8)
Depression	0	3 (2.4)	22 (17.3)	78 (61.4)	24 (18.9)
Anxiety	0	10 (7.87)	23 (18.11)	29 (22.83)	65 (51.18)

Table 3: Association of stress and depression with problem-based coping strategies in multivariate regression model

Variables	*B*	SE	*t*	*P*
Constant value	80.759	5.05	15.97	0.000
Stress	−0.816	0.249	−3.27	0.001
Depression	−1.23	0.281	−4.40	0.000

SE: Standard error

Table 4: Association of stress and anxiety with emotional-based coping strategies in multivariate regression model

Variables	*B*	SE	*t*	*P*
Constant value	39.36	4.458	8.83	0.000
Stress	0.643	0.231	2.78	0.006
Anxiety	0.745	0.239	3.12	0.002

SE: Standard error

depression has been associated with more frequent recruitment of problem-based coping styles.

We further observed that caregivers who exploited emotional-based coping methods had lower anxiety level. Previous studies have also described a significant and inverse relationship between anxiety and emotional-based coping methods.[28,29] In another study, however, a direct and significant relationship was observed between anxiety and emotional-based coping method.[30] This disagreement may be related to variabilities in the adaptability levels, availability of supporting services, and previous experience of stressful situations affecting individuals' responses to stressful situations.[31]

Conclusion

The findings of this study showed that a considerable ratio of traumatic patients' family caregivers suffered from severe anxiety and depression. Most of the caregivers exploited emotional-based rather than problem-based coping strategies exacerbating their anxiety. It is recommended to implement interventional programs to educate appropriate coping strategies to family caregivers to cope with their anxiety and depression. More extensive and diverse studies are warranted to promote mental health and reduce anxiety in caregivers.

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Conflicts of interest

There are no conflicts of interest.

References

1. Silver JM, McAllister TW, Arciniegas DB. Textbook of Traumatic Brain Injury. Lowa: American Psychiatric Pub; 2019.
2. Saadat S, Yousefifard M, Asady H, Moghadas Jafari A, Fayaz M, Hosseini M. The most important causes of death in Iranian population; a retrospective cohort study. Emerg (Tehran) 2015;3:16-21.
3. Dadkhah NM, Mohammadi SA. Feeling impasse and social restriction in adjustment with amputation by trauma patients: A qualitative study. J Nurs Physician War 2015;2:189-94.
4. Pochard F, Darmon M, Fassier T, Bollaert PE, Cheval C, Coloigner M, *et al.* Symptoms of anxiety and depression in family members of intensive care unit patients before discharge or death. A prospective multicenter study. J Crit Care 2005;20:90-6.
5. Rabie SS, Avazeh A, Eskandari F, Khalegh D, Mazloom S, Paryad E. A survey on psychological and environmental factors on family anxiety of the hospitalized patients in intensive care units. Iran J Crit Care Nurs 2011;3:175-80.
6. Rahmani Anaraki HM, Mahmoudi G, Rouhi GH, Asayesh H, Nasiri H, Rakhshani H. General health status of neurologic patients' caregivers and the related factors. J Res Dev Nurs Midwifery 2013;9:49-55.
7. Abbasi A, Rahmani H, Shariati A, Asayesh N, Ashraf Rezaee E, Mollaei A, *et al*. The relationship between caring burden and coping strategies in hemodialysis patients caregivers. J Urmia Nurs Midwifery Fac 2012;10:533-9.
8. Woltin KA, Sassenberg K, Albayrak N. Regulatory focus, coping strategies and symptoms of anxiety and depression: A comparison between Syrian refugees in turkey and germany. PLoS One 2018;13:e0206522.
9. Ghazanfari F, Kadampoor A. The relationship between mental health and coping strategies in citizenship of Khoramabad city. Q J Fund Ment Health 2008;1:47-54.
10. Baumstarck K, Chinot O, Tabouret E, Farina P, Barrié M, Campello C, *et al.* Coping strategies and quality of life: A longitudinal study of high-grade glioma patient-caregiver dyads. Health Qual Life Outcomes 2018;16:157.
11. Nedaei A, Paghoosh A, Sadeghi-Hosnijeh AH. Relationship between coping strategies and quality of life: Mediating role of cognitive emotion regulation skills. J Clin Psychol 2016;8:35-48.
12. Doustdar SA, Dabaghi P. Evaluating the coping styles and hemodynamic interaction on quality of life in cardiovascular patients in Mazandaran medical sciences hospitals. Nurse Physician War 2015;6:36-39.
13. Khan MA, Shirazi M, Arya AR. Coping strategies in relation to mental health. J of Subcontinent Researches 2012;4:71-92.
14. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. Behav Res Ther 1995;33:335-43.
15. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. Psychol Assess 1998;10:176.

16. Sahebi A, Asghari M, Salari R. Validation of depression, anxiety and stress (DASS-21) for Iranian population. Iran Psychol 2005;1:50-60.
17. Jalowiec A, Murphy SP, Powers MJ. Psychometric assessment of the Jalowiec coping scale. Nurs Res 1984;33:157-61.
18. Mohammadinia N, Rezaei M, Heydarikhayat N, Sharifipoor H, Darban F. Assessing stressors and coping styles in medical sciences students. Q J 2012;1:9-16.
19. Mazzotti E, Sebastiani C, Cappellini GC, Marchetti P. Predictors of mood disorders in cancer patients' caregivers. Support Care in Cancer 2013;21:643-7.
20. Rumpold T, Schur S, Amering M, Kirchheiner K, Masel EK, Watzke H, *et al.* Informal caregivers of advanced-stage cancer patients: Every second is at risk for psychiatric morbidity. Support Care Cancer 2016;24:1975-82.
21. Manteghi A, Hebrani P, Samari A, Heydari A. Level of expressed emotion, depression and caregiver burden in wives of veterans admitted in psychiatric ward and their relationship with readmissions. J Fundam Ment Health 2010;12:410-9.
22. Safaeian Z, Hejazi SS, Delavar E, Hoseini Azizi T, Haresabadi M. The relationship between caregiver burden, and depression, anxiety and stress in family caregivers of cancer patients referred to Imam Reza Hospital in Bojnurd City. Iran J Psychiatr Nurs 2017;5:7-14.
23. Papastavrou E, Charalambous A, Tsangari H. How do informal caregivers of patients with cancer cope: A descriptive study of the coping strategies employed. Eur J Oncol Nurs 2012;16:258-63.
24. Gheibizadeh M, Pourghane P, Mosaffa Khomami H, Heidari F, Atrkar Roushan Z. The relationship between stressors and coping strategies employed by retired elderly. J Nurs Educ 2017;4:36-43.
25. Abbasi A, Shamsizadeh M, Asayesh H, Rahmani H, Hosseini S, Talebi M. The relationship between caregiver burden with coping strategies in family caregivers of cancer patients. Iran Nurs Sci Assoc 2013;1:62-71.
26. Gupta A, Sharma R. Burden and coping of caregivers of physical and mental illnesses. Delhi Psychiatry J 2013;16:367-74.
27. Jahanshahi F, Abbasi Abyaneh N, Ebrahimi Abyaneh E. Effect of peer education on quality of life in people with heart failure. Cardiovasc Nurs J 2016;5:38-44.
28. Abdullah MC, Elias H, Uli J, Mahyuddin R. Relationship between coping and university adjustment and academic achievement amongst first year undergraduates in a Malaysian public university. Int J Arts Sci 2010;3:379-92.
29. Zeighami M, Pour Bahaadini Zarandi N. The relationship between academic achievement and students' general health and coping styles: A study on nursing, midwifery and health students of Islamic Azad university – Kerman branch. Strides Dev Med Educ 2011;8:e59589.
30. Cooper C, Katona C, Orrell M, Livingston G. Coping strategies, anxiety and depression in caregivers of people with Alzheimer's disease. Int J Geriatr Psychiatry 2008;23:929-36.
31. Niknami M, Dehghani F, Bouraki S, Kazem Nejad Leili E, Soleimani R. Strategies among students of Guilan university of medical sciences. J Holistic Nurs Midwifery 2014;24:62-8.